A Status Report on 40 CFR 61, Subpart H Including Recent Trends in Radionuclide Air Emissions from Department of Energy Facilities

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NESHAPs Requirements for Radionuclide Air Emissions

- Dose to a member of the public may not exceed 10 mrem per year
- Dose to a member of the public must be estimated using the EPA CAP-88 software, or other EPA-approved method.

NESHAPs Requirements (continued)

- Continuous monitoring of emissions is required for facilities that may exceed 1% of the dose limit for a member of the public
- Stack monitoring methods and quality assurance requirements specified in the regulation must be implemented at each site

NESHAPs Requirements (continued)

- Under Subpart H of 40 CFR 61, DOE facilities are required to report radionuclide air emissions annually to the U.S. EPA
- EPA has interpreted the regulation to include unmonitored and diffuse sources as well as monitored stack sources.

Radionuclide Air Emissions Reported by DOE Facilities

- Radionuclide emissions are reported by source type (stack or diffuse source)
- DOE also reports emissions of radon and other unplanned radionuclide releases, although they are not specifically regulated under Subpart H

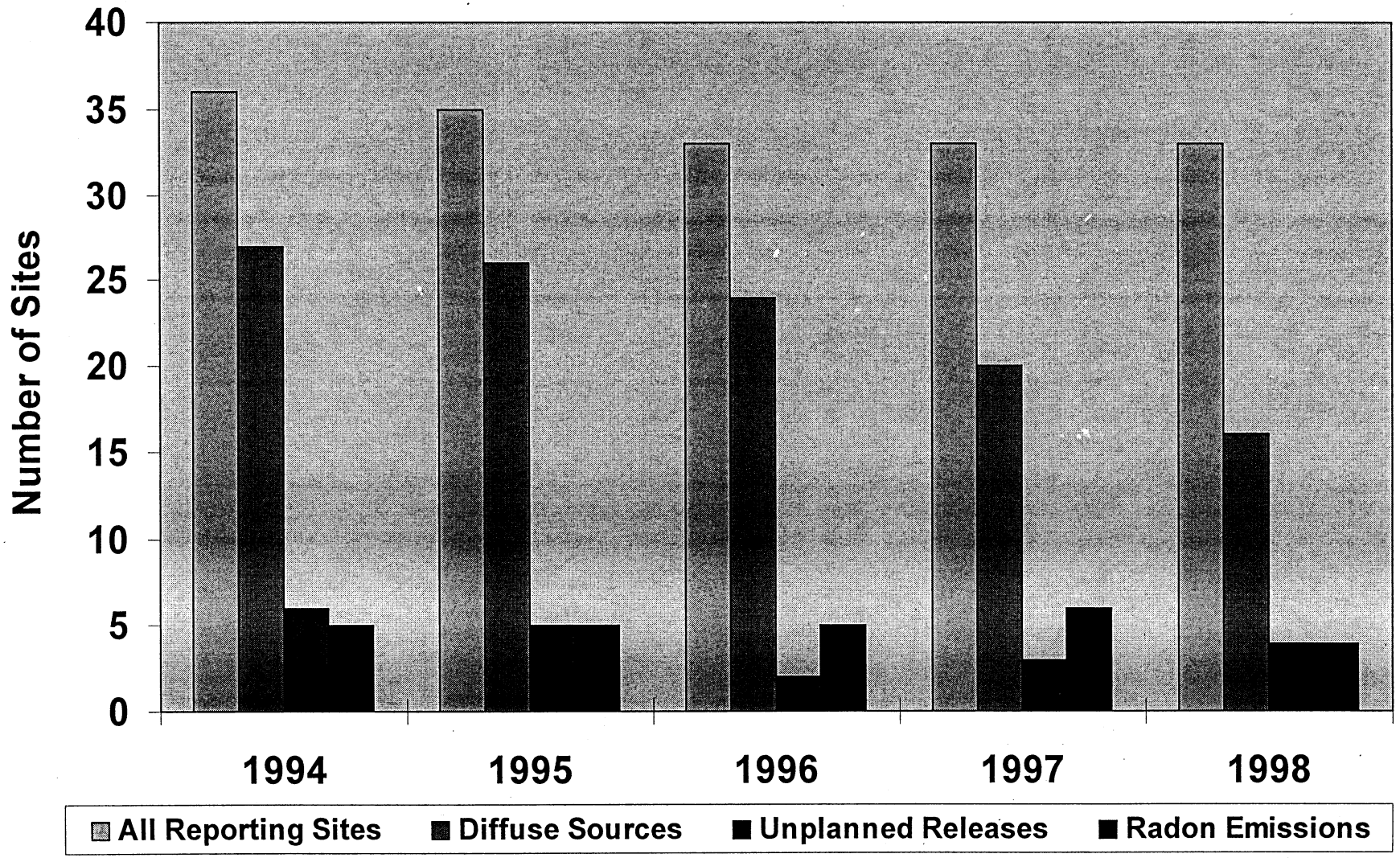
Radionuclide Air Emissions Summary of DOE Site Reports

- DOE summarizes annual facility reports submitted to EPA
- Emissions are summarized by radionuclide category:
  - tritium
  - noble gases
  - transuranics
  - other radionuclides

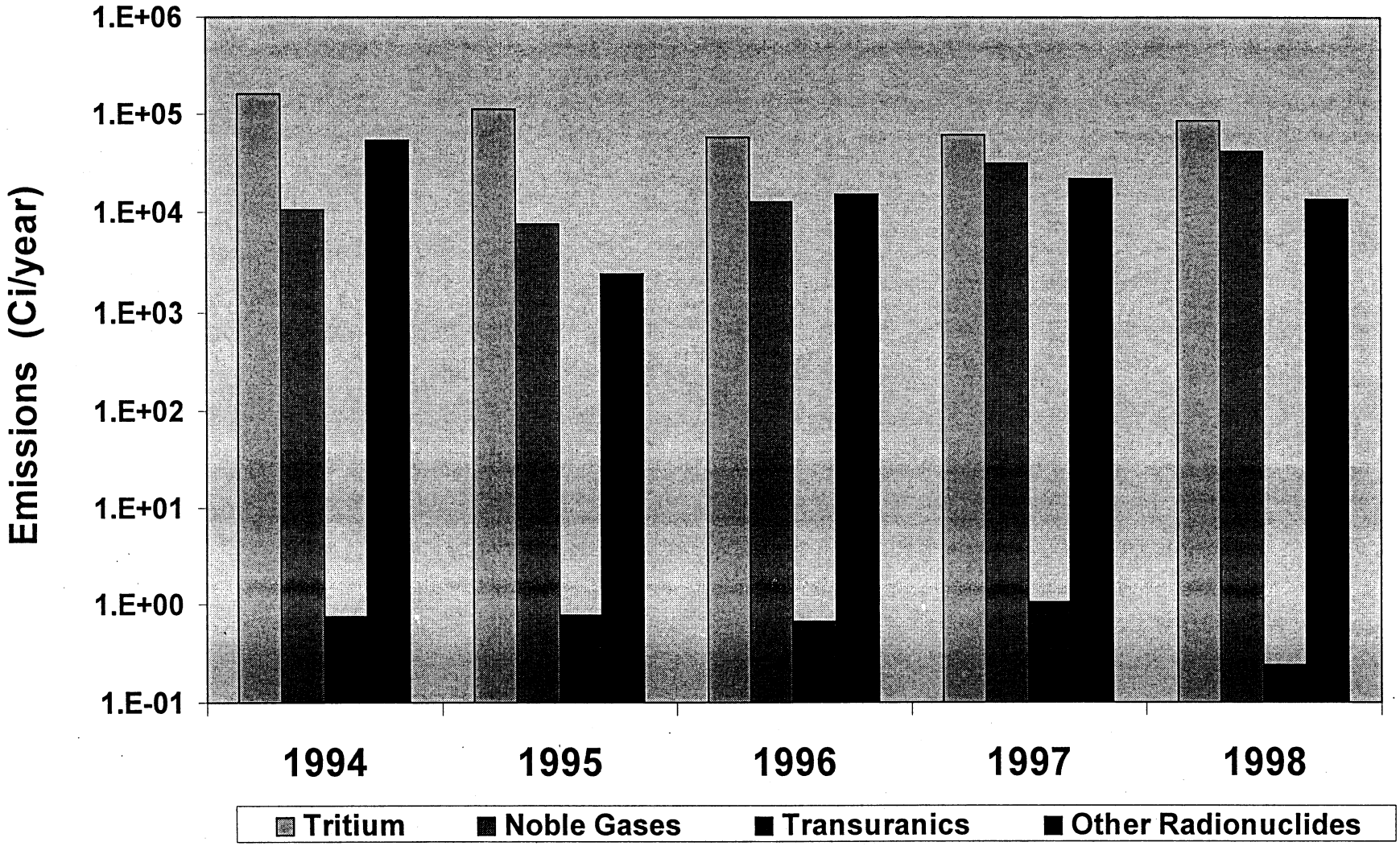
Radionuclide Air Emissions - Summary 1994-1998

- Trends in air emissions from 1994-1998 are summarized in the following graphs:
  - By radionuclide category
  - By source type

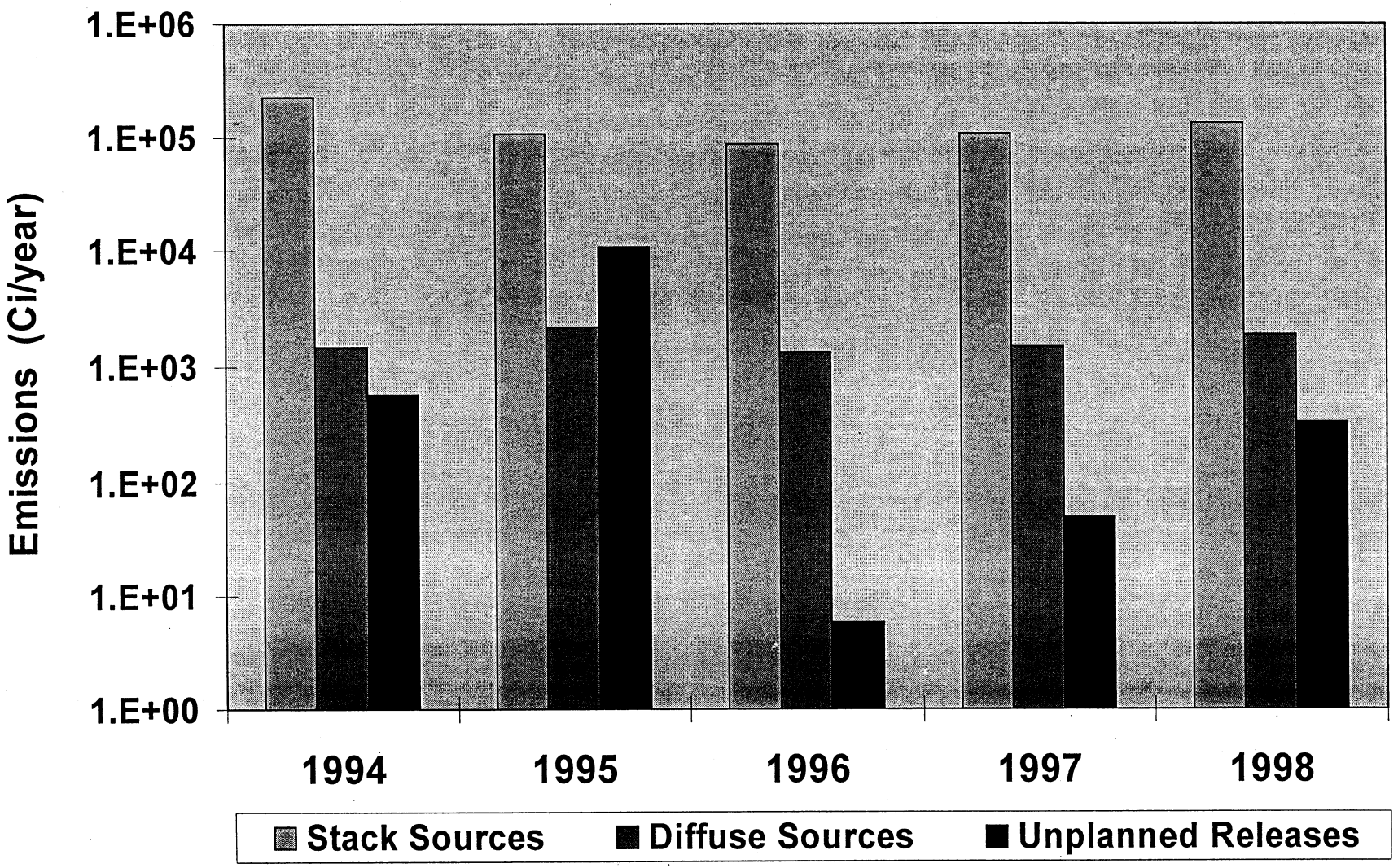
Number of Sites Reporting Radionuclide Emissions



Total Emissions by Radionuclide Category



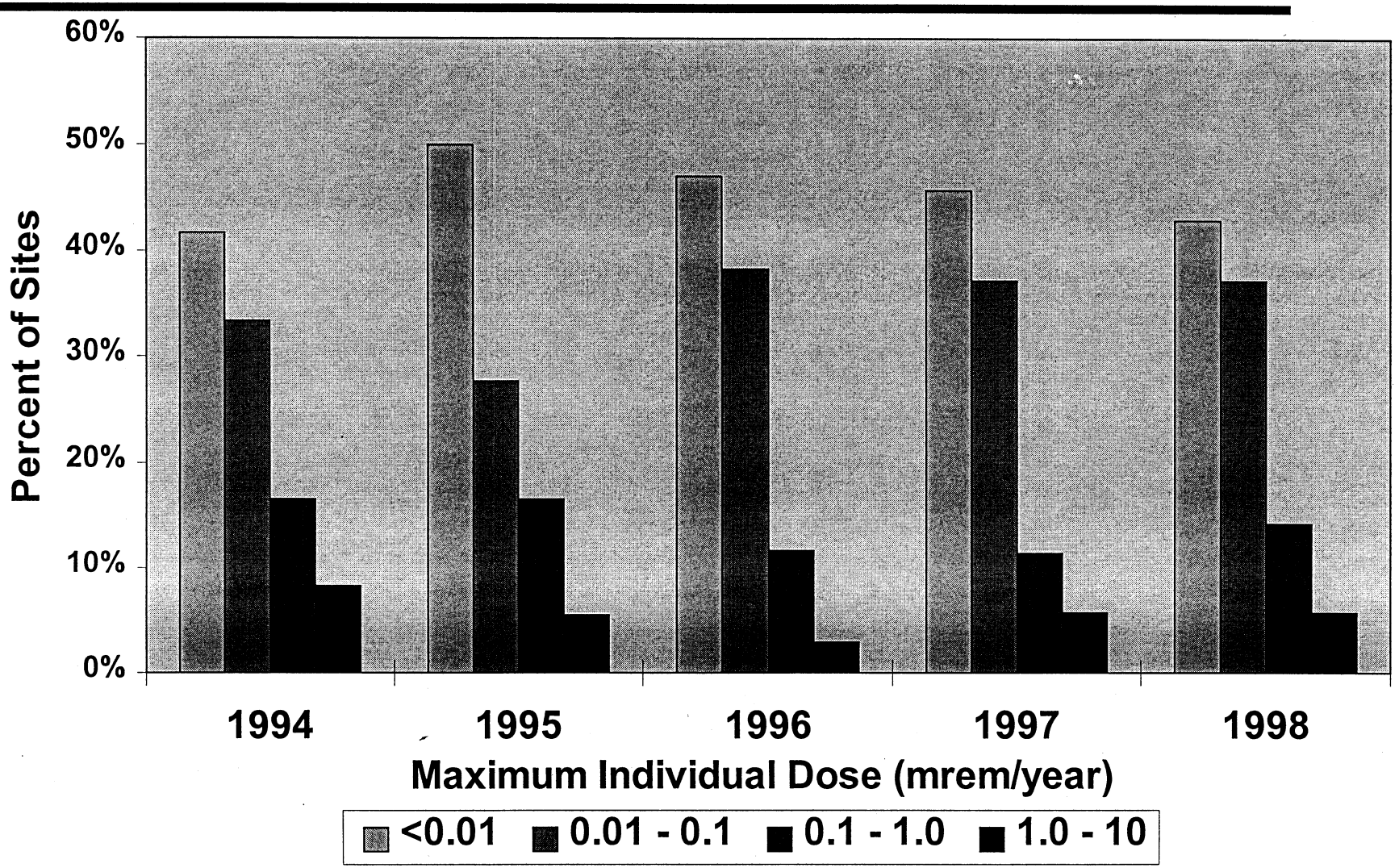
Total Radionuclide Emissions by Source Type



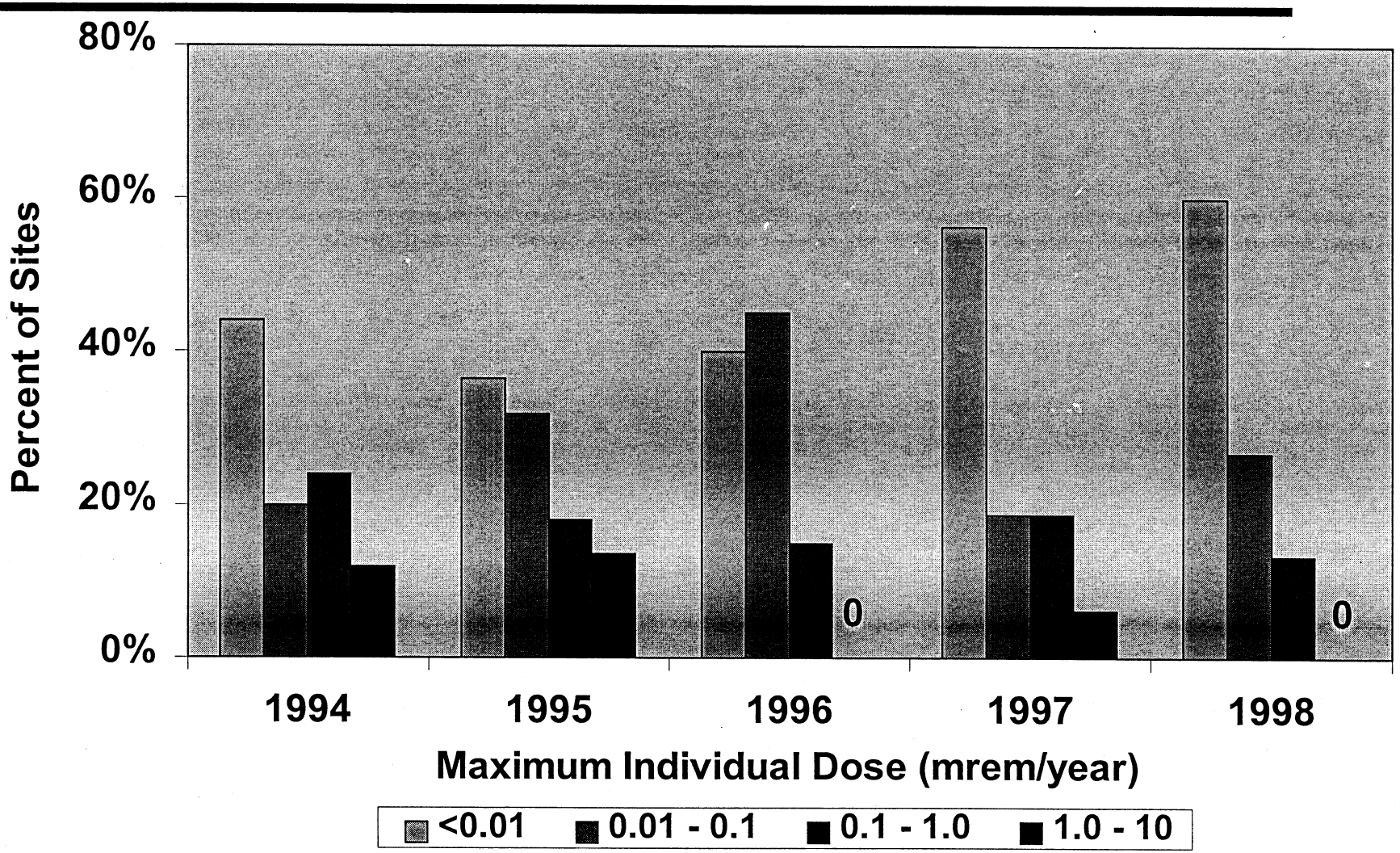
Dose to the Offsite Maximally Exposed Individual (MEI)

- Dose to the MEI is estimated separately for point sources (stacks) and diffuse sources (contaminated soil areas and other non-point sources)
- The following graphs present dose to the offsite MEI for routine emissions from point and diffuse sources during the years 1994-1998

Dose from Stack Sources



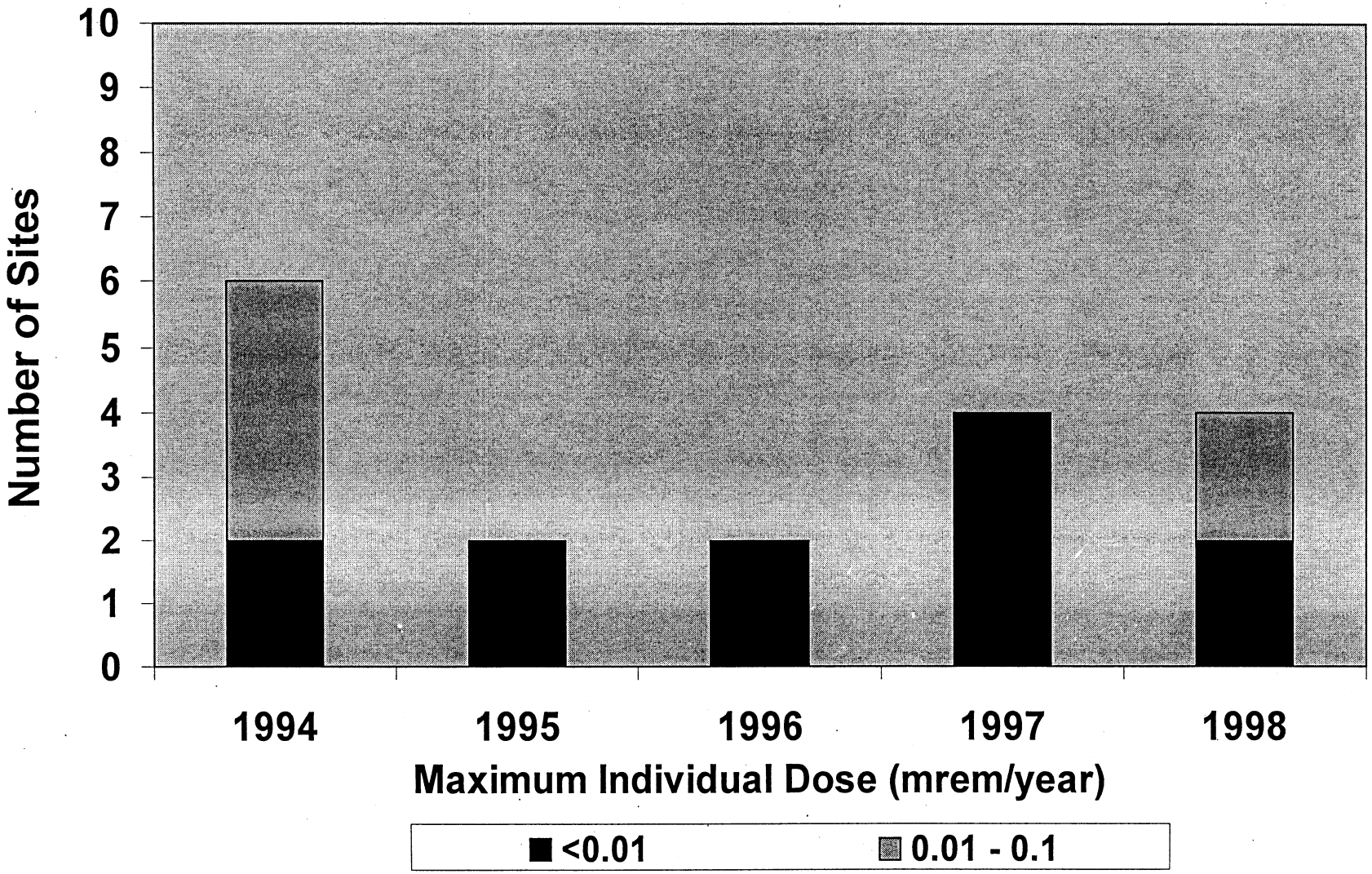
Dose from Diffuse Sources



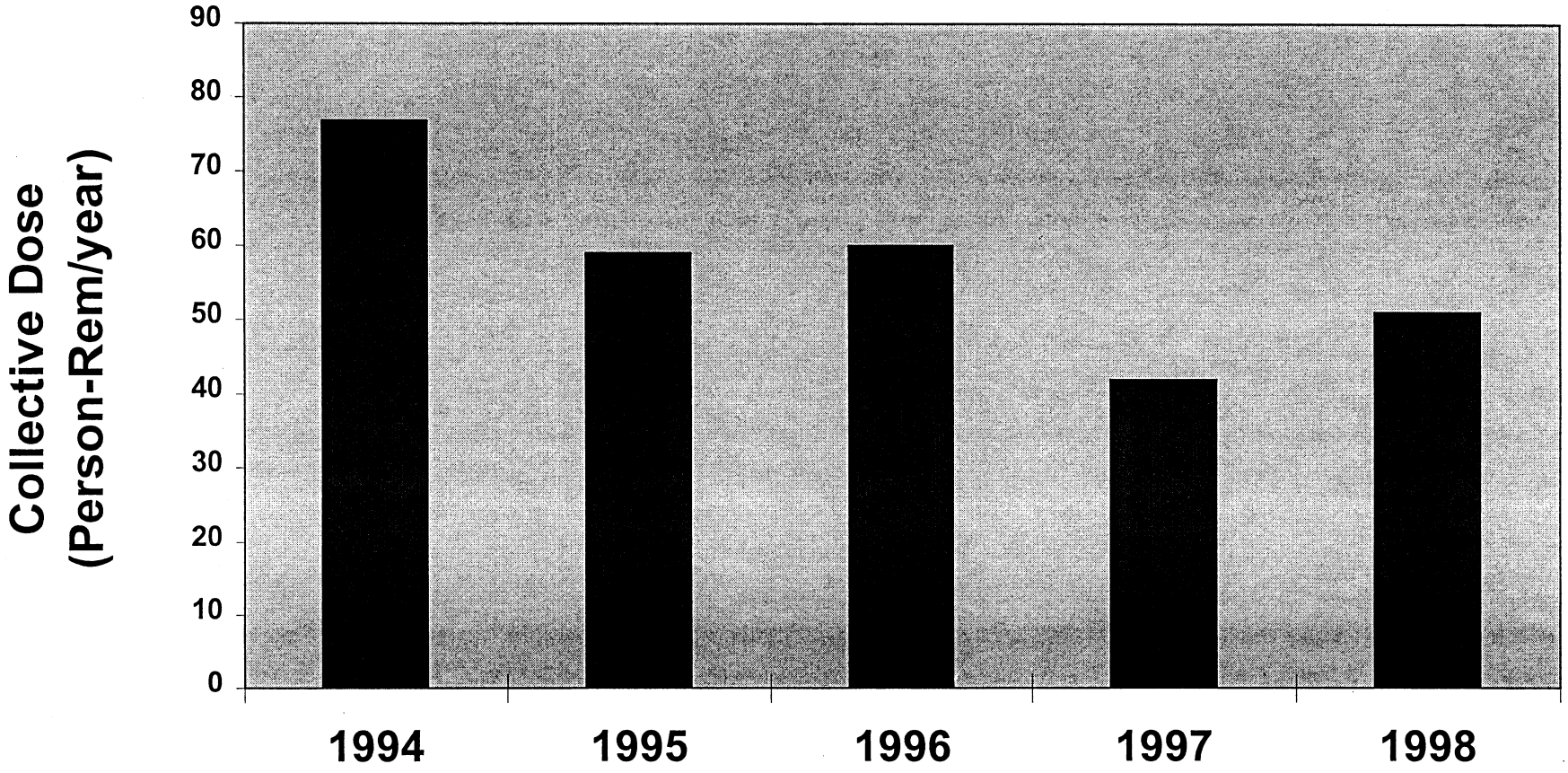
Dose to the Offsite Public - Supplemental Information

- In addition to the dose from routine emissions, DOE provides information on dose to individual members of the public from radon and unplanned releases
- Collective dose to the population within 50 miles of DOE facilities is also provided in DOE sites' annual reports

Dose from Unplanned Releases



Total Dose to the Population within 50 miles of DOE Sites



Compliance Status

- All DOE facilities are below the 10 mrem/year standard for dose to the offsite MEI
- Most DOE facilities are currently in compliance with radionuclide NESHAPs emissions monitoring requirements

Current Issues Related to Radionuclide NESHAPs at DOE Facilities

Implementation of ANSI Standard N13.1-1999

- EPA proposed amendment to 40 CFR Part 61, Subparts H and I (May 2000)
- Requires use of new ANSI standard for sampling radionuclide emissions
- Proposed application to newly constructed and modified major stacks
- Public and other input being considered

EPA Approval of CAP88-PC, Version 2.0

- Approval by EPA - October, 1999
- Windows user interface
- Improved management of site data
- Added radionuclide decay chains
- Updated Users' Guide Available

Onsite Members of the Public

- NESHAPs MEI in 40 CFR Part 61, Subpart H is "...any member of the public at any off-site point where there is a residence, school, business or office."
- Onsite MEI location is being evaluated as a result of DOE site reindustrialization
  - Less restrictive access to DOE sites
  - Non-DOE businesses or facilities located within DOE site boundary

Modeling Dose to an Onsite MEI

- EPA models developed for offsite residential-agricultural exposure scenario
- Need new methods to model onsite receptors
  - account for part time occupancy
  - model atmospheric dispersion for receptors near the DOE facility

Methods for Modeling Dose from Elemental Tritium Emissions

- CAP88-PC software models tritium as water vapor
- Dose from elemental tritium gas is substantially lower than from vapor in equilibrium with environmental media
- Need EPA approval of alternative methods for modeling elemental tritium dose at some DOE facilities